MECHANICAL GENERAL NOTES

1. COMPLY WITH THE FOLLOWING CODES AND STANDARDS:
   - 2018 INTERNATIONAL BUILDING CODE
   - 2018 INTERNATIONAL MECHANICAL CODE
   - 2018 INTERNATIONAL ENERGY CONSERVATION CODE
2. DRAWINGS ARE DIAGRAMMATIC AND NOT ALL APPURTENANCES ARE SHOWN. ALLOW FOR ADDITIONAL PIPE/DUCT OFFSETS, AS REQUIRED. PROVIDE ALL MATERIALS AND LABOR TO PROVIDE A COMPLETE AND OPERABLE SYSTEM IN ACCORDANCE WITH THE CONTRACT DRAWINGS, SPECIFICATIONS, AND AUTHORITY HAVING JURISDICTION.
3. COORDINATE INSTALLATION OF WORK WITH ALL OTHER TRADES.
4. COORDINATE SIZE AND LOCATION OF ROOFTOP CURBS WITH STRUCTURAL FRAMING.
5. COORDINATE SIZE AND LOCATIONS OF ALL FLOOR, WALL, AND ROOF OPENINGS REQUIRED TO INSTALL THE WORK WITH ALL OTHER TRADES.
6. COORDINATE DUCTWORK AND PIPING LAYOUT WITH OPENINGS IN STRUCTURAL BEAMS, WALLS, ELEMENTS, ETC.
7. COORDINATE EXTERIOR LOUVERS WITH ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
8. COORDINATE REQUIREMENTS FOR PROVISION OF MOTOR STARTERS, DISCONNECTS, CONTACTORS, CONTROL WIRING, ETC. AS REQUIRED FOR A PROPER FUNCTIONING SYSTEM WITH THE ELECTRICAL AND CONTROLS CONTRACTORS.
9. DEVELOP AND MAINTAIN A SET OF COORDINATION DRAWINGS AT THE JOB SITE THAT ACCOUNTS FOR ALL TRADES. REVIEW THE COORDINATION DRAWINGS, COORDINATE WITH ALL TRADES, AND RESOLVE ANY POTENTIAL CONFLICTS PRIOR TO INSTALLING ANY PORTION OF WORK.
10. SUBMIT WRITTEN REQUEST FOR INFORMATION WHERE CONSTRUCTABILITY ISSUES ARE ENCOUNTERED IN THE FIELD. PROVIDE A FULL DESCRIPTION OF THE ISSUE AND RECOMMENDED SOLUTIONS. INCLUDE SKETCHES FOR EACH OPTION ALONG WITH ANY ASSOCIATED CHANGE ORDER COST ESTIMATES.
11. ANY DEVIATIONS FROM THE DRAWINGS MUST BE APPROVED IN WRITING BY THE ENGINEER OF RECORD. ANY CHANGES OR MODIFICATIONS MADE WITHOUT CONSENT MAY RESULT IN WORK BEING REMOVED AND INSTALLED ACCORDING TO THE PLANS.
12. SPECIFICATIONS AND DRAWINGS ARE COMPLEMENTARY, AND MUST BE USED IN COMBINATION TO OBTAIN COMPLETE CONSTRUCTION INFORMATION. SUBMIT WRITTEN REQUEST FOR INFORMATION IF ANY DISCREPANCIES BETWEEN SPECIFICATION AND DRAWINGS ARE FOUND.
13. PROVIDE ONLY NEW MATERIALS AND EQUIPMENT FROM REPUTABLE MANUFACTURERS REGULARLY ENGAGED IN THE MANUFACTURE OF SUCH PRODUCTS. PERFORM ALL WORK IN A PROFESSIONAL MANNER BY WORKERS SKILLED IN THE TYPE OF WORK BEING PERFORMED.
14. KEEP THE WORK SITE AND SURROUNDING AREA FREE FROM ACCUMULATION OF WASTE MATERIALS GENERATED BY WORK PERFORMED UNDER THIS CONTRACT. REMOVE CONSTRUCTION DEBRIS FROM THE WORK SITE DAILY AND DISPOSE OF IT IN A LEGAL MANNER.
15. PROVIDE WARRANTY FOR ALL WORK (MATERIALS, LABOR, AND EQUIPMENT) FOR A PERIOD OF ONE YEAR COMMENCING WITH THE DATE OF ACCEPTANCE OF ALL WORK BY THE OWNER UNLESS OTHERWISE NOTED IN THE SPECIFICATIONS.
16. OBTAIN ALL LICENSES AND PERMITS REQUIRED BY STATE AND LOCAL JURISDICTIONAL AUTHORITIES FOR PERFORMANCE OF WORK.
17. MAINTAIN A RED LINE SET OF RECORD DRAWINGS AT THE JOB SITE THAT REFLECT ACTUAL EXECUTION OF THE WORK INCLUDING UPDATED EQUIPMENT SCHEDULES, DETAILS, CONTROLS DIAGRAMS AND SEQUENCES AND LOCATIONS OF EQUIPMENT, PIPING, AND DUCTWORK. PROVIDE THESE DRAWINGS IN CAD AND PDF FORMAT TO THE OWNER (AS-BUILT DRAWINGS).

MECHANICAL INSTALLATION NOTES

18. COMPLETE ALL TESTS BEFORE ANY INSULATION IS APPLIED.
19. UNLESS OTHERWISE NOTED INSTALL ALL PIPING AND DUCT OVERHEAD TIGHT TO STRUCTURE ABOVE.
20. DO NOT CLOSE IN WALLS OR CEILINGS PRIOR TO INSPECTION BY ENGINEER OR OWNER'S REPRESENTATIVE. PROVIDE CLEAR UNOBSTRUCTED ACCESS TO WORK AND ANY LIFTS OR LADDERS NEEDED FOR INSPECTIONS. DURING INSPECTIONS PROVIDE PERSONNEL FAMILIAR WITH THE WORK AND TECHNICAL REQUIREMENTS OF THE WORK TO WALK THE ENGINEER/OWNER'S REPRESENTATIVE THROUGH THE WORK TO BE INSPECTED, DESCRIBE PROGRESS, AND ANSWER QUESTIONS. MAINTAIN A RECORD OF WORK INSPECTED AND COORDINATE WITH ENGINEER/OWNER'S REPRESENTATIVE ON PROGRESS OF INSPECTION TILL COMPLETION. SCHEDULE INSPECTIONS WITH ENGINEER/OWNER'S REPRESENTATIVE A MINIMUM OF 2 WEEKS PRIOR.
21. LOCATE PRESSURE, TEMPERATURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH STRAIGHT SECTIONS OF DUCT/PIPE UPSTREAM/DOWNSTREAM IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
22. THE PRODUCT OF A SINGLE MANUFACTURER SHALL BE USED FOR EACH ITEM OF THE SAME EQUIPMENT TYPE.
23. CONFORM TO ASTM 315 AND ACI 318 FOR REINFORCEMENT, DETAILING, AND PLACEMENT OF CONCRETE. CONCRETE SHALL CONFORM TO ASTM C94. CONCRETE WORK SHALL CONFORM TO ACI 318, PART ENTITLED "CONSTRUCTION REQUIREMENTS." COMPRESSIVE STRENGTH IN 28 DAYS SHALL BE 3,000 PSI. TOTAL AIR CONTENT OF EXTERIOR CONCRETE SHALL BE BETWEEN 5 AND 7 PERCENT BY VOLUME. SLUMP SHALL BE BETWEEN 3 AND 4 INCHES. CONCRETE SHALL BE CURED FOR 7 DAYS AFTER PLACEMENT.
24. INSTALL ALL CONTROL WIRE IN CONDUIT. CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND THE ELECTRICAL SPECIFICATIONS.
25. PROVIDE ACCESS PANELS/DOORS IN CEILINGS, WALLS, FLOORS, AND DUCTWORK FOR ALL ITEMS REQUIRING ADJUSTMENT, TESTING, OR INSPECTION INCLUDING SMOKE DETECTORS, FIRE DAMPERS, SMOKE DAMPERS, VOLUME DAMPERS, ACTUATORS, FANS, HUMIDIFIERS, COILS, ETC.
26. ATTACH DUCTWORK, PIPING, EQUIPMENT, ETC. SUPPORTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. DO NOT SUPPORT WORK FROM METAL DECKS.
27. PROVIDE UL LISTED PENETRATION ASSEMBLIES WHERE DUCTS, PIPES, ETC. PENETRATE FIRE/SMOKE RATED PARTITIONS THAT MAINTAIN THE FIRE/SMOKE RESISTANCE RATING.
28. PROVIDE SLEEVES AT ALL FLOOR, WALL, AND ROOF PENETRATIONS.
29. ALL PRODUCTS LOCATED IN PLENUM AREAS SHALL HAVE A MAXIMUM FLAME SPREAD INDEX OF 25 AND A MAXIMUM SMOKE DEVELOPED INDEX OF 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84 OR ANSI/UL 723.
30. SEAL ALL PENETRATIONS OF SLAB-TO-SLAB PARTITIONS AND SHAFTS AIRTIGHT TO PRESERVE RETURN AIR PATHWAYS.
31. ALL PIPE SIZES SHOWN ARE NOMINAL SIZES.
32. LOCATE HVAC AIR INTAKE A MINIMUM OF 10 FEET FROM PLUMBING VENTS, EXHAUST OUTLETS, GAS-FIRED EQUIPMENT VENTS, ETC.

MECHANICAL EQUIPMENT INSTALLATION NOTES

33. INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS AND PER CONTRACT DRAWINGS AND SPECIFICATIONS. IF MANUFACTURERS' INSTRUCTIONS ARE IN DIRECT CONFLICT WITH INSTRUCTIONS ON THE DRAWINGS OR IN THE SPECIFICATIONS CONTACT THE ENGINEER OF RECORD FOR CLARIFICATION.
34. COORDINATE WORK WITH OTHER TRADES TO PROVIDE ALL CLEARANCES FOR EQUIPMENT SERVICE AND MAINTENANCE INCLUDING ACCESS TO PANELS, CONTROLS, FILTERS, VALVING, ETC., VERIFY PHYSICAL DIMENSIONS OF EQUIPMENT TO ENSURE THAT ALL CLEARANCES CAN BE MET BEFORE PURCHASING EQUIPMENT.
35. COORDINATE EQUIPMENT CONNECTIONS WITH MANUFACTURER'S CERTIFIED DRAWINGS, PROVIDE ALL PIPE AND DUCT TRANSITIONS AS REQUIRED TO CONNECT TO EQUIPMENT.
36. PROVIDE VIBRATION ISOLATION FOR ALL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
37. PROVIDE FLEXIBLE DUCT CONNECTIONS AT DUCT CONNECTIONS TO AIR HANDLING UNITS, FANS, AND OTHER EQUIPMENT REQUIRING VIBRATION ISOLATION.
38. PROVIDE EQUIPMENT DRAIN LINES TO NEAREST DRAIN, PIPE SIZE SHALL BE NO SMALLER THAN DRAIN CONNECTION SIZE. PROVIDE P-TRAP AT UNIT FOR AIR CONDITIONING UNIT CONDENSATE DRAINS AND ROUTE TO STORM DRAIN/ROOF DRAIN.
39. AIR HANDLING UNITS SHALL OPERATE WITH NO MOISTURE CARRYOVER FROM COOLING COIL.
40. PROVIDE TERMINAL AIR CONDITIONING UNITS WITH MANUFACTURER'S INTEGRAL CONDENSATE PUMP UNLESS OTHERWISE NOTED.
41. PROVIDE EQUIPMENT WITH MANUFACTURER'S INTEGRAL DISCONNECT AND POWER RECEPTACLE UNLESS OTHERWISE NOTED.
42. FINNED TUBE RADIATION ENCLOSURES SHALL BE WALL-TO-WALL UNLESS OTHERWISE INDICATED.
43. TERMINATE GAS-FIRED EQUIPMENT VENTS A MINIMUM OF 30 INCHES ABOVE THE ROOF AND PROVIDE A RAIN CAP.
44. REPLACE ALL AIR FILTERS PRIOR TO AIR BALANCING AND CLEAN OUT ALL PIPE STRAINERS PRIOR TO WATER BALANCING.
45. PROVIDE FULL SET OF LAMINATED AS-BUILT SCHEMATIC CONTROL DIAGRAMS, SEQUENCES, POINTS LISTS, AND WIRING DIAGRAMS IN MECHANICAL ROOM PROVIDE THE SAME ON INSIDE DOOR OF EACH CONTROL PANEL FOR THAT PANEL'S EQUIPMENT.
46. ALL EQUIPMENT SHALL HAVE ENGRAVED NAMEPLATE REFLECTING EQUIPMENT CAPACITIES EITHER PROVIDED BY MANUFACTURER OR CONTRACTOR. NAMEPLATE SHALL BE READILY VISIBLE AND UNOBSTRUCTED.
47. MAINTAIN 10' SEPARATION BETWEEN ROOF MOUNTED EQUIPMENT AND UNPROTECTED ROOF EDGES.

HVAC NOTES

48. DUCT PRESSURE CLASS: SUPPLY +1/2"; RETURN -1/2"; EXHAUST -1/2"
49. DUCT SEAL CLASS: C.
50. INCORPORATE DUCT MODIFICATIONS TO SUIT CEILING DEVICE LOCATIONS AS INDICATED ON ARCHITECT'S COORDINATED REFLECTED CEILING DRAWING.
51. RISES AND DROPS IN DUCTWORK, ACCESS DOORS, VOLUME DAMPERS, ETC. ARE INDICATED ON DRAWINGS FOR CLARITY FOR SPECIFIC LOCATION REQUIREMENTS AND DO NO INDICATE THE EXTENT OF THE REQUIREMENTS FOR THESE ITEMS.
52. PROVIDE INTERACTIVE WALL MOUNTED DEVICES WITH CENTERLINE 48 INCHES ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED.
53. PROVIDE DUCT SOUND LINER IN DUCTWORK 25 FEET UP AND DOWNSTREAM OF AIR HANDLING UNIT(S).
54. DUCT DIMENSIONS ON DRAWINGS ARE INTERNAL CLEAR DIMENSIONS, INCREASE DUCT SIZE TO COMPENSATE FOR DUCT LINING THICKNESS.
55. PROVIDE DOUBLE RADIUS TURNING VANES ON ALL 90-DEGREE SQUARE ELBOWS EXCEPT WHERE PROHIBITED BY CODE OR OTHERWISE INDICATED. PROVIDE DUCT ACCESS DOOR UPSTREAM OF ALL ELBOWS WITH TURNING VANES.
56. FLEXIBLE DUCTWORK SHALL NOT EXCEED 5 FEET IN LENGTH. INSTALL FLEXIBLE DUCTWORK SO AS TO MAINTAIN ITS ROUND CROSS-SECTIONAL SHAPE. DO NOT SUBJECT FLEXIBLE DUCTWORK TO MORE THAN 90 DEGREES OF BENDS, CUMULATIVE.
57. PROVIDE SHEET METAL FLASHING FOR EXPOSED DUCTWORK WALL AND CEILING PENETRATIONS.
58. PROTECT ALL NEW AND EXISTING HVAC EQUIPMENT BEFORE AND AFTER INSTALLATION, INCLUDING DUCTWORK, VAV TERMINALS, ZONE DAMPERS AND DIFFUSERS, FROM DUST AND CONTAMINATION. IF THE HVAC SYSTEM IS USED DURING FIT-OUT CONSTRUCTION, THE PRESCRIPTIVE MEASURES IN SMACNA (CHAPTER 3) SHALL BE FOLLOWED REGARDING SOURCE CONTROL, PATHWAY INTERRUPTION, HOUSEKEEPING AND CLEANUP. CONTRACTOR IS RESPONSIBLE FOR CLEANUP COST FOR EQUIPMENT AND DUCTWORK CONTAMINATED WITH CONSTRUCTION DUST INCLUDING VACUUM CLEANING THE PLENUM SPACE ABOVE THE CEILING. FOLLOWING ARE PROCEDURES TO PROTECT THE DUCTWORK: SEAL ALL DUCT OPENINGS, BOTH SUPPLY AND RETURN, AND WRAP ALL EQUIPMENT WITH PLASTIC. PLACE FILTER MEDIA (NO LESS THAN MERV 8 RATED FILTERS) AT ALL OPENINGS FOR RETURN AIR INCLUDING RETURN GRILLES IN THE CEILING OR NEGATIVE PRESSURE SIDE OF THE SYSTEM. REGULARLY REPLACE THE FILTER MEDIA, NO LESS THAN ONCE PER WEEK, FOR THE DURATION OF CONSTRUCTION. INSTITUTE DAILY CLEANING ACTIVITIES, SUCH AS USING WETTING AGENTS TO MINIMIZE AIRBORNE DUSTS. VACUUM CLEAN WITH HEPA FILTERS FOR FINAL CLEANING.
59. MAINTAIN 10' SEPARATION BETWEEN MECHANICAL EXHAUST OUTLETS AND OUTDOOR AIR INTAKES.

MECHANICAL SPECIFICATIONS

SECTION 230513 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT
1. COMPLY WITH NEMA MG 1 UNLESS OTHERWISE INDICATED. DUTY: CONTINUOUS DUTY AT AMBIENT TEMPERATURE OF 40 DEG C AND AT ALTITUDE OF 3300 FEET ABOVE SEA LEVEL
2. POLYPHASE MOTORS: NEMA MG 1, DESIGN B, MEDIUM INDUCTION MOTOR, PREMIUM EFFICIENT, AS DEFINED IN NEMA MG SERVICE FACTOR: 1.15

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT
1. CARBON-STEEL PIPE HANGERS AND SUPPORTS. DESCRIPTION: MSS SP-58, TYPES 1 THROUGH 58, FACTORY-FABRICATED COMPONENTS. GALVANIZED METALLIC COATINGS: PREGALVANIZED, HOT-DIP GALVANIZED, OR ELECTRO-GALVANIZED. HANGER RODS: CONTINUOUS-THREAD ROD, NUTS, AND WASHER MADE OF CARBON STEEL.
2. TRAPEZE PIPE HANGERS. DESCRIPTION: MSS SP-58, TYPE 59, SHOP- OR FIELD-FABRICATED PIPE-SUPPORT ASSEMBLY MADE FROM STRUCTURAL CARBON-STEEL SHAPES WITH MSS SP-58 CARBON-STEEL HANGER RODS, NUTS, SADDLES, AND U-BOLTS.
3. INSULATION-INSERT MATERIAL FOR HOT PIPING. WATER-REPELLENT-TREATED, ASTM C533, TYPE I CALCIUM SILICATE WITH 100-PSI MINIMUM COMPRESSIVE STRENGTH. FOR TRAPEZE OR CLAMPED SYSTEMS: INSERT AND SHIELD SHALL COVER ENTIRE CIRCUMFERENCE OF PIPE. FOR CLEVIS OR BAND HANGERS: INSERT AND SHIELD SHALL COVER LOWER 180 DEGREES OF PIPE. INSERT LENGTH: EXTEND 2 INCHES BEYOND SHEET METAL SHIELD FOR PIPING OPERATING BELOW AMBIENT AIR TEMPERATURE.

SECTION 230548.13 - VIBRATION CONTROLS FOR HVAC
1. ELASTOMERIC ISOLATION PADS. SINGLE OR MULTIPLE LAYERS OF SUFFICIENT DUROMETER STIFFNESS FOR UNIFORM LOADING OVER PAD AREA. PAD MATERIAL: OIL- AND WATER-RESISTANT RUBBER
2. COIL-SPRING AND ELASTOMERIC-INSERT HANGER WITH SPRING AND INSERT IN COMPRESSION. FRAME: STEEL, FABRICATED FOR CONNECTION TO THREADED HANGER RODS AND TO ALLOW FOR A MAXIMUM OF 30 DEGREES OF ANGULAR HANGER-ROD MISALIGNMENT WITHOUT BINDING OR REDUCING ISOLATION EFFICIENCY. OUTSIDE SPRING DIAMETER: NOT LESS THAN 80 PERCENT OF THE COMPRESSED HEIGHT OF THE SPRING AT RATED LOAD. MINIMUM ADDITIONAL TRAVEL: 50 PERCENT OF THE REQUIRED DEFLECTION AT RATED LOAD. OVERLOAD CAPACITY: SUPPORT 200 PERCENT OF RATED LOAD, FULLY COMPRESSED, WITHOUT DEFORMATION OR FAILURE. ELASTOMERIC ELEMENT: MOLDED, OIL-RESISTANT RUBBER OR NEOPRENE. STEEL-WASHER-REINFORCED CUP TO SUPPORT SPRING AND BUSHING PROJECTING THROUGH BOTTOM OF FRAME.

SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT
1. METAL LABELS FOR EQUIPMENT. ANODIZED ALUMINUM, 0.032-INCH MINIMUM THICKNESS, AND HAVING PREDRILLED OR STAMPED HOLES FOR ATTACHMENT HARDWARE. FASTENERS: STAINLESS-STEEL RIVETS OR SELF-TAPPING SCREWS.
2. PIPE LABELS: PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION ACCORDING TO ASME A13.1. PRETENSIONED PIPE LABELS: PRECOILED, SEMIRIGID PLASTIC FORMED TO COVER FULL CIRCUMFERENCE OF PIPE AND TO ATTACH TO PIPE WITHOUT FASTENERS OR ADHESIVE.
3. DUCT LABEL CONTENTS: INCLUDE IDENTIFICATION OF DUCT SERVICE USING SAME DESIGNATIONS OR ABBREVIATIONS AS USED ON DRAWINGS; ALSO INCLUDE DUCT SIZE AND AN ARROW INDICATING FLOW DIRECTION. ADHESIVE: CONTACT-TYPE PERMANENT ADHESIVE, COMPATIBLE WITH LABEL AND WITH SUBSTRATE. MULTILAYER, MULTICOLOR, PLASTIC LABELS FOR MECHANICAL ENGRAVING.

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC
1. TAB SPECIALIST QUALIFICATIONS, CERTIFIED BY NEBB OR TABB. INSTRUMENTATION TYPE, QUANTITY, ACCURACY, AND CALIBRATION: COMPLY WITH REQUIREMENTS IN ASHRAE 111, SECTION 4, "INSTRUMENTATION. ASHRAE/IES 90.1 COMPLIANCE: APPLICABLE REQUIREMENTS IN ASHRAE/IES 90.1, SECTION 6.7.2.3 - "SYSTEM BALANCING."
2. EXAMINE THE CONTRACT DOCUMENTS TO BECOME FAMILIAR WITH PROJECT REQUIREMENTS AND TO DISCOVER CONDITIONS IN SYSTEMS DESIGNS THAT MAY PRECLUDE PROPER TAB OF SYSTEMS AND EQUIPMENT. EXAMINE INSTALLED SYSTEMS FOR BALANCING DEVICES, SUCH AS TEST PORTS, GAUGE COCKS, THERMOMETER WELLS, FLOW-CONTROL DEVICES, BALANCING VALVES AND FITTINGS, AND MANUAL VOLUME DAMPERS. VERIFY THAT LOCATIONS OF THESE BALANCING DEVICES ARE APPLICABLE FOR INTENDED PURPOSE AND ARE ACCESSIBLE. EXAMINE THE APPROVED SUBMITTALS FOR HVAC SYSTEMS AND EQUIPMENT. EXAMINE TEMPORARY AND PERMANENT STRAINERS. VERIFY THAT TEMPORARY STRAINER SCREENS USED DURING SYSTEM CLEANING AND FLUSHING HAVE BEEN REMOVED AND PERMANENT STRAINER BASKETS ARE INSTALLED AND CLEAN.
3. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM IN ACCORDANCE WITH THE PROCEDURES CONTAINED IN AABC'S "NATIONAL STANDARDS FOR TOTAL SYSTEM BALANCE" AND IN THIS SECTION. MARK EQUIPMENT AND BALANCING DEVICES, INCLUDING DAMPER-CONTROL POSITIONS, VALVE POSITION INDICATORS, FAN-SPEED-CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, WITH PAINT OR OTHER SUITABLE, PERMANENT IDENTIFICATION MATERIAL TO SHOW FINAL SETTINGS.
4. SUBMIT FINAL TAB REPORT FOR REVIEW BY ENGINEER OF RECORD.

SECTION 230713 - DUCT INSULATION
1. INDOOR SUPPLY, RETURN, OUTDOOR-AIR DUCT: MINERAL-FIBER BLANKET, 2-1/5 INCHES THICK (R-6 MINIMUM).
2. SUPPLY, RETURN, OUTDOOR-AIR DUCT IN UNCONDITIONED SPACE: MINERAL-FIBER BLANKET, 2-1/5 INCHES THICK (R-6 MINIMUM).
3. MINERAL-FIBER BLANKET INSULATION: MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C553, TYPE II AND ASTM C1290, TYPE III WITH FACTORY-APPLIED FSK JACKET.
4. MINERAL-FIBER ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A. FSK JACKET ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A FOR BONDING INSULATION JACKET LAP SEAMS AND JOINTS.
5. VAPOR-RETARDER MASTIC: WATER BASED; SUITABLE FOR INDOOR USE ON BELOW AMBIENT SERVICES. WATER-VAPOR PERMEANCE: COMPLY WITH ASTM C755, SECTION 7.2.2, TABLE 2, FOR INSULATION TYPE AND SERVICE CONDITIONS.
6. FSK TAPE: FOIL-FACE, VAPOR-RETARDER TAPE MATCHING FACTORY-APPLIED JACKET WITH ACRYLIC ADHESIVE; COMPLYING WITH ASTM C1136.
7. METAL, ADHESIVELY ATTACHED, PERFORATED-BASE INSULATION HANGERS: BASEPLATE WELDED TO PROJECTING SPINDLE THAT IS CAPABLE OF HOLDING INSULATION, OF THICKNESS INDICATED, SECURELY IN POSITION INDICATED WHEN SELF-LOCKING WASHER IS IN PLACE. COMPLY WITH THE FOLLOWING REQUIREMENTS. BASEPLATE: PERFORATED, GALVANIZED CARBON-STEEL SHEET, 0.030 INCH THICK BY 2 INCHES SQUARE. SPINDLE: COPPER- OR ZINC-COATED, LOW-CARBON STEEL, FULLY ANNEALED, 0.106-INCH- DIAMETER SHANK, LENGTH TO SUIT DEPTH OF INSULATION INDICATED. ADHESIVE: RECOMMENDED BY HANGER MANUFACTURER. PRODUCT WITH DEMONSTRATED CAPABILITY TO BOND INSULATION HANGER SECURELY TO SUBSTRATES INDICATED WITHOUT DAMAGING INSULATION, HANGERS, AND SUBSTRATES.

SECTION 230719 - HVAC PIPING INSULATION
1. CONDENSATE DRAIN: MINERAL-FIBER, PREFORMED PIPE INSULATION, TYPE I: 1/2 INCH.
2. MINERAL-FIBER, PREFORMED PIPE: MINERAL OR GLASS FIBERS BONDED WITH A THERMOSETTING RESIN. COMPLY WITH ASTM C547. PREFORMED PIPE INSULATION: TYPE I, GRADE A WITH FACTORY-APPLIED ASJ. ASJ: WHITE, KRAFT-PAPER, FIBERGLASS-REINFORCED SCRIM WITH ALUMINUM-FOIL BACKING; COMPLYING WITH ASTM C1136, TYPE I. ASJ TAPE: WHITE VAPOR-RETARDER TAPE MATCHING FACTORY-APPLIED JACKET WITH ACRYLIC ADHESIVE, COMPLYING WITH ASTM C1136.
3. MINERAL-FIBER ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A. ASJ ADHESIVE AND FSK AND PVDC JACKET ADHESIVE: COMPLY WITH MIL-A-3316C, CLASS 2, GRADE A, FOR BONDING INSULATION JACKET LAP SEAMS AND JOINTS.
4. STAPLES: OUTWARD-CLINCHING INSULATION STAPLES, NOMINAL 3/4 INCH WIDE, STAINLESS STEEL OR MONEL.
5. VAPOR-RETARDER MASTIC, WATER BASED: SUITABLE FOR INDOOR USE ON BELOW-AMBIENT SERVICES. WATER-VAPOR PERMEANCE: COMPLY WITH ASTM E96/E96M OR ASTM F1249.
6. REFRIGERANT PIPING: FLEXIBLE ELASTOMERIC. SUCTION: 2 INCHES, LIQUID: 1 INCH. CLOSED-CELL, SPONGE- OR EXPANDED-RUBBER MATERIALS. COMPLY WITH ASTM C534/C534M, TYPE I FOR TUBULAR MATERIALS.
7. SOLVENT-BASED FLEXIBLE ELASTOMERIC ADHESIVE. SERVICE TEMPERATURE RANGE: 40 TO 200 DEG F.
8. OUTDOOR PIPING: PVC JACKET 20 MILS THICK. HIGH-IMPACT-RESISTANT, UV-RESISTANT PVC COMPLYING WITH ASTM D1784, CLASS 16354-C. ADHESIVE: AS RECOMMENDED BY JACKET MATERIAL MANUFACTURER.
9. INSULATION SHALL BE CONTINUOUS THROUGH WALL AND ROOF PENETRATIONS.

SECTION 230923.12 - CONTROL DAMPERS
1. UNLESS OTHERWISE INDICATED, USE PARALLEL BLADE CONFIGURATION FOR TWO-POSITION CONTROL, EQUIPMENT ISOLATION SERVICE, AND WHEN MIXING TWO AIRSTREAMS. FOR OTHER APPLICATIONS, USE OPPOSED BLADE CONFIGURATION.
2. RECTANGULAR DAMPERS WITH STEEL FLAT BLADES. LEAKAGE: LEAKAGE SHALL NOT EXCEED 4.8 CFM/SQ. FT. AGAINST 1-IN. WG DIFFERENTIAL STATIC PRESSURE. PRESSURE DROP: 0.1-IN. WG AT 1500 FPM ACROSS A 24-BY-24-INCH DAMPER WHEN TESTED ACCORDING TO AMCA 500-D, FIGURE 5.3. DAMPER SHALL HAVE AMCA SEAL FOR BOTH AIR LEAKAGE AND AIR PERFORMANCE. GALVANIZED FRAME 0.06 INCH THICK WITH INTEGRAL FLANGES. GALVANIZED BLADES 0.06 INCH THICK. REPLACEABLE, MECHANICALLY ATTACHED, PVC-COATED POLYESTER SEALS.
3. ACTUATORS SHALL OPERATE RELATED DAMPER(S) WITH SUFFICIENT RESERVE POWER TO PROVIDE SMOOTH MODULATING ACTION OR TWO-POSITION ACTION AND PROPER SPEED OF RESPONSE AT VELOCITY AND PRESSURE CONDITIONS TO WHICH THE DAMPER IS SUBJECTED. ACTUATORS SHALL PRODUCE SUFFICIENT POWER AND TORQUE TO CLOSE OFF AGAINST THE MAXIMUM SYSTEM PRESSURES ENCOUNTERED. ACTUATORS SHALL BE SIZED TO CLOSE OFF AGAINST THE FAN SHUTOFF PRESSURE AS A MINIMUM REQUIREMENT. INTERNAL SPRING RETURN MECHANISM TO DRIVE CONTROLLED DEVICE TO AN END POSITION (OPEN OR CLOSE) ON LOSS OF POWER.

SECTION 230923.23 - PRESSURE INSTRUMENTS
1. SPACE STATIC PRESSURE SENSOR FOR RECESSED CEILING MOUNTING. ALUMINUM ROUND PLATE WITH PERFORATED CENTER ARRANGED TO SENSE SPACE STATIC PRESSURE. EXPOSED SURFACES PROVIDED WITH BRUSH FINISH. SENSOR INTENDED FOR FLUSH MOUNT ON FACE OF CEILING WITH PRESSURE CHAMBER RECESSED IN CEILING PLENUM. PERFORMANCE: WITHIN 1 PERCENT OF ACTUAL ROOM STATIC PRESSURE IN VICINITY OF SENSOR WHILE BEING SUBJECTED TO AN AIR VELOCITY OF 1000 FPM FROM A 360 DEGREE RADIAL SOURCE.

SECTION 230923.27 - TEMPERATURE INSTRUMENTS
1. THERMISTOR, SINGLE-POINT DUCT AIR TEMPERATURE SENSORS. PROBE: SINGLE-POINT SENSOR WITH A STAINLESS-STEEL SHEATH. LENGTH: AS REQUIRED BY APPLICATION TO ACHIEVE TIP AT MIDPOINT OF AIR TUNNEL, UP TO 18 INCHES. ENCLOSURE: JUNCTION BOX WITH REMOVABLE COVER; NEMA 250, TYPE 1 FOR INDOOR APPLICATIONS AND TYPE 4 FOR OUTDOOR APPLICATIONS.
2. THERMOWELLS. BRASS OR STAINLESS STEEL FURNISHED WITH HEAT-TRANSFER COMPOUND TO ELIMINATE AIR GAP BETWEEN WALL OF SENSOR AND THERMOWELL AND TO REDUCE TIME CONSTANT.

SECTION 232300 - REFRIGERANT PIPING
1. COPPER TUBE: ASTM B 88, TYPE K. WROUGHT-COPPER FITTINGS, BRAZED-JOINT: ASME B16.50
2. PROVIDE SHUT OFF VALVES AT ALL PORTS OF BRANCH SELECTOR (INCLUDING SPARE PORTS). PROVIDE FITTINGS AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. PROVIDE MANUFACTURER'S SYSTEM SUBMITTAL FOR VRV SYSTEM INCLUDING ACTUAL UNIT CAPACITIES AT DESIGN TEMPERATURES AND PIPE LENGTHS.

SECTION 233113 - METAL DUCTS
1. DUCT HANGERS AND SUPPORTS SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS DESCRIBED IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE.
2. AIRSTREAM SURFACES: SURFACES IN CONTACT WITH AIRSTREAM SHALL COMPLY WITH REQUIREMENTS IN ASHRAE 62.1. ASHRAE COMPLIANCE: APPLICABLE REQUIREMENTS IN ASHRAE 62.1, SECTION 5 - "SYSTEMS AND EQUIPMENT," AND SECTION 7 - "CONSTRUCTION AND SYSTEM STARTUP." ASHRAE/IES COMPLIANCE: APPLICABLE REQUIREMENTS IN ASHRAE/IES 90.1, SECTION 6.4.4 - "HVAC SYSTEM CONSTRUCTION AND INSULATION."
3. DUCT DIMENSIONS: UNLESS OTHERWISE INDICATED, ALL DUCT DIMENSIONS INDICATED ON DRAWINGS ARE INSIDE CLEAR DIMENSIONS AND DO NOT INCLUDE INSULATION OR DUCT WALL THICKNESS.
4. GENERAL FABRICATION REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" BASED ON INDICATED STATIC-PRESSURE CLASS UNLESS OTHERWISE INDICATED.
5. CONSTRUCT DUCTS OF GALVANIZED SHEET STEEL UNLESS OTHERWISE INDICATED. GALVANIZED SHEET STEEL: COMPLY WITH ASTM A653/A653M. FOR DUCTS EXPOSED TO WEATHER, CONSTRUCT OF TYPE 304 STAINLESS STEEL INDICATED BY MANUFACTURER TO BE SUITABLE FOR OUTDOOR INSTALLATION.

SECTION 233300 - AIR DUCT ACCESSORIES
1. PRESSURE RELIEF DAMPERS. GRAVITY BALANCED. 16-GAUGE- THICK, GALVANIZED SHEET STEEL. MULTIPLE SINGLE-PIECE PARALLEL BLADES. GALVANIZED STEEL AXLES.
2. STANDARD, STEEL, MANUAL VOLUME DAMPERS. 16-GAUGE-THICK, GALVANIZED SHEET STEEL. GALVANIZED STEEL; 16 GAUGE THICK. LOCKING DEVICE TO HOLD DAMPER BLADES IN A FIXED POSITION WITHOUT VIBRATION.
3. FIRE DAMPERS: STATIC AND DYNAMIC; RATED AND LABELED IN ACCORDANCE WITH UL 555 BY AN NRTL. 1-1/2 HOUR RATING. CURTAIN TYPE WITH BLADES OUTSIDE AIRSTREAM FABRICATED WITH ROLL-FORMED GALVANIZED STEEL; WITH MITERED AND INTERLOCKING CORNERS; GAUGE IN ACCORDANCE WITH UL LISTING. REPLACEABLE, 165 DEG F RATED, FUSIBLE LINKS.
4. MANUFACTURED TURNING VANES FOR METAL DUCTS: FABRICATE CURVED BLADES OF GALVANIZED SHEET STEEL; SUPPORT WITH BARS PERPENDICULAR TO BLADES SET; SET INTO VANE RUNNERS SUITABLE FOR DUCT MOUNTING. GENERAL REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE"; FIGURE 4-3, "VANES AND VANE RUNNERS," AND FIGURE 4-4, "VANE SUPPORT IN ELBOWS. SINGLE WALL FOR DUCTS UP TO 48 INCHES WIDE AND DOUBLE WALL FOR LARGER DIMENSIONS.
5. DUCT-MOUNTED ACCESS DOORS: FABRICATE ACCESS PANELS IN ACCORDANCE WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE"; FIGURE 7-2 (7-2M), "DUCT ACCESS DOORS AND PANELS," AND FIGURE 7-3, "ACCESS DOORS - ROUND DUCT. GALVANIZED SHEET METAL WITH INSULATION FILL AND THICKNESS AS INDICATED FOR DUCT PRESSURE CLASS. 24-GAUGE-THICK GALVANIZED STEEL DOOR PANEL. HINGES AND LATCHES: 1-BY-1-INCH BUTT OR PIANO HINGE AND CAM LATCHES.
6. FLEXIBLE CONNECTORS. FIRE-PERFORMANCE CHARACTERISTICS: ADHESIVES, SEALANTS, FABRIC MATERIALS, AND ACCESSORY MATERIALS SHALL HAVE FLAME-SPREAD INDEX NOT EXCEEDING 25 AND SMOKE-DEVELOPED INDEX NOT EXCEEDING 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84. AIRSTREAM SURFACES: SURFACES IN CONTACT WITH THE AIRSTREAM SHALL COMPLY WITH REQUIREMENTS IN ASHRAE 62.1. COATINGS AND ADHESIVES: COMPLY WITH UL 181, CLASS 1. INDOOR SYSTEM, FLEXIBLE CONNECTOR FABRIC: GLASS FABRIC DOUBLE COATED WITH NEOPRENE.

SECTION 233346 - FLEXIBLE DUCTS
1. INSULATED, FLEXIBLE DUCT: UL 181, CLASS 1, TWO-PLY VINYL FILM SUPPORTED BY HELICALLY WOUND, SPRING-STEEL WIRE; FIBROUS-GLASS INSULATION; POLYETHYLENE VAPOR-BARRIER FILM. PRESSURE RATING: 10-INCH WG POSITIVE AND 1.0-INCH WG NEGATIVE. COMPLY WITH ASHRAE/IES 90.1 FOR R VALUE.
2. CLAMPS: NYLON STRAP IN SIZES 3 THROUGH 18 INCHES, TO SUIT DUCT SIZE.
3. COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER IMPERFECTIONS.

MECHANICAL ABBREVIATIONS

A	AMPS
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
APD	AIR PRESSURE DROP
BTU	BRITISH THERMAL UNIT
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CO	CLEAN OUT
CU	CONDENSING UNIT
DB	DRY BULT TEMPERATURE, °F
DN	DOWN
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
HP	HORSEPOWER
HZ	HERTZ
IN WG	INCHES OF WATER COLUMN
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE, °F
LV	LOUVER
MBH	THOUSAND BTU PER HOUR
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OED	OPEN END DUCT
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GUAGE
RA	RETURN AIR
RH	RELATIVE HUMIDITY
RPM	REVOLUTIONS PER MINUTE
SA	SUPPLY AIR
TYP	TYPICAL
V	VOLTS
WB	WET BULB TEMPERATURE, °F
°F	DEGREES FAHRENHEIT
φ	PHASE

MECHANICAL LEGEND

Symbol	Description
	MECHANICAL EQUIPMENT
	SUPPLY AIR DEVICE
	RETURN AIR DEVICE
	CONCIAL TAP WITH DAMPER
	MOTORIZE DAMPER
	MANUAL BALANCING DAMPER
	RIGID DUCTWORK
	FLEX DUCT
T	ZONE THERMOSTAT
H	HUMIDISTAT
A/###	DIFFUSER TAG / AIR FLOW
FCU-#	EQUIPMENT TAG
	KEY NOTE TAG

MECHANICAL SHEET LIST

SHEET NUMBER	SHEET NAME
M-001	MECHANICAL LEGENDS AND NOTES
M-101	FIRST FLOOR MECHANICAL PLAN
M-102	SECOND FLOOR MECHANICAL PLAN
M-103	THIRD FLOOR MECHANICAL PLAN
M-104	FOURTH FLOOR MECHANICAL PLAN
M-151	ROOF MECHANICAL PLAN

AIR DEVICE SCHEDULE

MARK	SERVICE	TYPE	AIRFLOW (CFM)	TOTAL PD (IN WG)	MAX SOUND (NC)	NECK SIZE (IN)	NOMINAL FACE SIZE (IN)	MOUNTING	BASIS OF DESIGN	
									MANUFACTURER	MODEL
S-1	SUPPLY	LOUVERED FACE DIFFUSER	0 - 120	0.08	30	8 DIA	24 x 24	CEILING	TITUS	TDC
S-2	SUPPLY	LOUVERED FACE DIFFUSER	125 - 210	0.08	30	10 DIA	24 x 24	CEILING	TITUS	TDC
R-1	RETURN	LOUVERED FACE REGISTER	0 - 295	0.08	30	10 x 10	10 x 10	CEILING	TITUS	350FL
R-2	RETURN	LOUVERED FACE REGISTER	0 - 1300	0.08	30	24 x 24	24 x 24	CEILING	TITUS	350FL

NOTES:
1. COORDINATE WITH ARCHITECTURAL DRAWINGS FOR CEILING TYPE.
2. STEEL CONSTRUCTION.
3. PROVIDE BASIS OF DESIGN MANUFACTURER OR APPROVED EQUAL. ACCEPTABLE MANUFACTURERS LIMITED TO PRICE, TITUS, KRUEGER AND NAILOR.

ELECTRIC HEATER SCHEDULE

MARK	LOCATION SERVED	TYPE	KW	CFM	ELECTRICAL	BASIS OF DESIGN	
					V - Φ - HZ	MANUFACTURER	MODEL NUMBER
UH-1	ELECTRICAL ROOM	UNIT HEATER	3	350	208 - 1 - 60	QMARK	MUH03-81
WH-1	STAIR A	WALL HEATER	1.5	65	208 - 1 - 60	QMARK	CWH1202DSF
WH-2	STAIR B	WALL HEATER	1.5	65	208 - 1 - 60	QMARK	CWH1202DSF

NOTE: PROVIDE MANUFACTURER'S DISCONNECT.

FAN SCHEDULE

MARK	LOCATION	CFM	ESP (IN WG)	TYPE	ELECTRICAL		WEIGHT (LBS)	BASIS OF DESIGN		NOTES
					V / PH / HZ	MOTOR SIZE		MANUFACTURER	MODEL	
EF-1	**TOILET ROOM**	**90**	**0.25**	**CEILING**	**120 / 1 / 60**	**21 W**	**17**	**GREENHECK**	**SP-A125**	**1, 2, 3**
EF-2	TOILET ROOM	90	0.25	CEILING	120 / 1 / 60	21 W	17	GREENHECK	SP-A125	1, 2, 3
EF-3	JANITOR'S CLOSET	90	0.25	CEILING	120 / 1 / 60	21 W	17	GREENHECK	SP-A125	1, 2, 3
EF-4	ELECTRICAL ROOM	90	0.25	CEILING	120 / 1 / 60	21 W	17	GREENHECK	SP-A125	1, 2, 4
EF-5	ELECTRICAL CLOSET	90	0.25	CEILING	120 / 1 / 60	21 W	17	GREENHECK	SP-A125	1, 2, 4

NOTES:
1. PROVIDE MANUFACTURER'S INTEGRAL BACKDRAFT DAMPER.
2. PROVIDE MANFACTURER'S DISCONNECT.
3. INTERLOCK WITH ASSOCIATED ROOM LIGHTS.
4. PROVIDE MANUFACTURER'S THERMOSTAT.

SPLIT SYSTEM HEAT PUMP SCHEDULE

MARK	LOCATION	SERVICE	SUPPLY CFM	OUTSIDE AIR CFM	ESP (IN)	MIN. REQ. SEER	DX COOLING CAPACITY (MBH) TOTAL	DX COOLING CAPACITY (MBH) SENSIBLE	HEATING CAPACITY @ 17°F (MBH)	HEATING ELECTRIC BACK-UP (KW)	ELECTRICAL V / PH / HZ	ELECTRICAL MCA	ELECTRICAL MOCP	BASIS OF DESIGN MANUFACTURER	BASIS OF DESIGN MODEL
AHU-1	OFFICE	OFFICE	650	100	0.50	14.0	18.2	14.0	10.9	5.8	208 / 1 / 60	38.0	40.0	TRANE	GAM5B0A24
AHU-2	STORAGE	STORAGE	1,400	336	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-3	STORAGE	STORAGE	1,400	336	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-4	STORAGE	STORAGE	1,400	336	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-5	STORAGE	STORAGE	1,400	336	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-6	STORAGE	STORAGE	1,400	336	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-7	STORAGE	STORAGE	1,400	444	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-8	STORAGE	STORAGE	1,400	444	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-9	STORAGE	STORAGE	1,400	444	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-10	STORAGE	STORAGE	1,400	444	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-11	STORAGE	STORAGE	1,400	355	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-12	STORAGE	STORAGE	1,400	355	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-13	STORAGE	STORAGE	1,400	355	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-14	STORAGE	STORAGE	1,400	355	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-15	STORAGE	STORAGE	1,400	355	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-16	STORAGE	STORAGE	1,400	340	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-17	STORAGE	STORAGE	1,400	340	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-18	STORAGE	STORAGE	1,400	340	0.50	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48
AHU-19	STORAGE	STORAGE	1,400	340	0.75	14.0	41.5	42.0	27.0	7.2	208 / 1 / 60	51.0	60.0	TRANE	GAM5B0C48

NOTES:
1. PROVIDE CONDENSATE PUMP.
2. RATE CONDENSING UNIT FOR 105 DEG F AMBIENT.
3. PROVIDE MINIMUM MERV 8 DISPOSABLE FILTERS.
4. PROVIDE MANUFACTURER'S 7-DAY PROGRAMABLE THERMOSTAT FOR CONTROL OF UNIT.
5. PROVIDE ECONOMIZER MIXING BOX COMPLETE WITH DAMPER ACTUATORS, SENSORS, AND CONTROLS FOR ECONOMIZER MODE. PLENUMS OF FLORIDA MODEL PMB WITH EC720 CONTROLLER OR EQUIVALENT UNIT THAT IS COMPATIBLE WITH AHU.
6. R-410A REFRIGERANT.

SPLIT SYSTEM CONDENSING UNIT SCHEDULE

MARK	LOCATION	SERVICE	ELECTRICAL			BASIS OF DESIGN	
			V / PH / HZ	MCA	MOCP	MANUFACTURER	MODEL
CU-1	OFFICE	AHU-1	208 / 1 / 60	12.0	20.0	TRANE	4TWR6018
CU-2	STORAGE	AHU-2	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-3	STORAGE	AHU-3	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-4	STORAGE	AHU-4	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-5	STORAGE	AHU-5	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-6	STORAGE	AHU-6	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-7	STORAGE	AHU-7	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-8	STORAGE	AHU-8	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-9	STORAGE	AHU-9	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-10	STORAGE	AHU-10	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-11	STORAGE	AHU-11	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-12	STORAGE	AHU-12	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-13	STORAGE	AHU-13	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-14	STORAGE	AHU-14	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-15	STORAGE	AHU-15	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-16	STORAGE	AHU-16	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-17	STORAGE	AHU-17	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-18	STORAGE	AHU-18	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048
CU-19	STORAGE	AHU-19	480 / 3 / 60	8.0	15.0	TRANE	4TWA4048

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MECHANICAL LEGENDS AND NOTES

POUGHKEEPSIE NY STORAGE

DIAMOND POINT DEVELOPMENT

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DUTCHESS COUNTY

STATE OF NEW YORK · EMILY STARR · No. 103507 · LICENSED PROFESSIONAL ENGINEER

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